



January 27, 2008

California Energy Commission
Attention Docket No. 07-BSTD-1
Dockets Office
1516 Ninth Street, MS – 4
Sacramento, CA 95814

Re: Comments on the Proposed 2008 Building Ventilation Standards in Title 24 (Sections 121, 125, and 150)

We are generally in support of the following recommendations made by the California Air Resources Board in their communication dated January 3, 2008. We are in complete support of all viable efforts to accomplish energy efficiency without compromising the indoor environment. Responsible energy efficiency guidelines and standards should always consider the health and safety of building occupants and be verified by certified third parties.

Non Residential Buildings

1. Section 121.b.1 We recommend that natural ventilation systems be engineered to provide sufficient outdoor air ventilation, occupant safety and thermal comfort. Design demonstration should include documentation of system performance by a third party certified with either the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing Adjusting and Balancing Bureau (TABB) utilizing their approved standards. The standards should also require a mechanical system back up for supplemental ventilation when needed.

Currently Title 24 does not specify that system performance verification must be done by certified third parties. The certifying bodies listed above all are referenced by the US Corps of Engineers, US General Services Agency, Master Spec, and California OSHPD to verify system performance utilizing accepted engineering methods. Verification of ventilation standards is crucial to establish that a proper balance between energy efficiency and life safety has actually been accomplished.

2. Section 121b.2, Air Filter Design – We support the proposal to require a pressure gage to indicate the air pressure drop across the filter, this will assist building owners and their operating and maintenance staff to make objective decisions to change filters based on current condition, not just based on length of time since last change.
3. When buildings are located next to major sources of outdoor pollutants, we suggest a requirement for higher efficiency filtration systems including pre-filters. These systems should be designed by qualified individuals who are competent in such system design. Systems with improper MERV rated filters actually contribute to lower energy efficiency while allowing outdoor pollutants to be circulated throughout the buildings they serve.

4. Section 121.c.3.C Exemption 3 – We are neutral on this proposal, and yield to the expertise of the professionals at the ARB.
5. Section 121.c.4 DCV Controls - We support the ARB proposal that DCV controls have a “fail-safe” mode so that sensor malfunction or failure will not result in under ventilation. A manual override should also be required.

We object to the striking of the requirement for 121.c.5 which removes the requirement for verification of installation of DCV systems prior to certificate of occupancy. It is vital to have third party verification of all building environmental systems. This is the only way to assure the building owners that their systems are in compliance with Title 24, operating safe and efficiently. We suggest that an overall requirement be placed in Section 121.c.5 that all systems be balanced and verified by a third party who is currently certified with either the Associated Air Balance Council (AABC), National Environmental Balancing Bureau (NEBB), or the Testing Adjusting and Balancing Bureau (TABB). That report should be signed, stamped and forwarded to the building owner, CEC and the appropriate Code authority.

6. Section 121.c.4.DCV outdoor CO2 assumption - We support proper instrumentation and control systems to assure good indoor environmental quality. Assuming or estimating levels of outdoor pollutants in design phase can lead to compromising of the indoor environment. Proper ventilation in buildings is vital to overall building operation and occupant health.
7. Section 125, DCV acceptance requirements – No comment we remain neutral
8. Section 125.a.1 and Appendix NA 7.5.1, Verification of ventilation rates in occupied spaces - We agree that testing air flows at the supply registers is critical to ascertain proper ventilation and flow to occupied spaces. Several reports recently have pointed to the dismal performance of HVAC duct systems. Measuring total outside air into a building at the air intake without verifying flow at the supply registers is meaningless.

We suggest that the following language be placed in Section 125 Required Non-Residential Mechanical System Acceptance: All HVAC systems covered by this Section should be balanced and verified by a third party who is currently certified with either the Associated Air Balance Council (AABC) www.aabcdirect.com , National Environmental Balancing Bureau (NEBB) www.nebb.org , or the Testing Adjusting and Balancing Bureau (TABB) www.tabbcertified.org . A certified balancing report signed, stamped and should be provided to the building owner, CEC and the appropriate Code authority.

Residential Buildings

9. Section 150(o). Ventilation for Indoor Air Quality, Reference to ASHRAE 62.2-2007 - There seems to be some dialogue that the 2007 ASHRAE 62.2-2007 may have gone to far when it lowered required air change requirements in residential design. The new standard takes into account infiltration for reaching the required outside air requirements however not considering that homes today are tighter than homes

used to establish the 2007 standard. (David Grimsrud, Ph.d. and Angela Vreeland, How much Ventilation is enough? Energy Use and IAQ, Published ASHRAE IAQ Applications Winter 2008)

10. We recommend that reference to the 2004 ASHRAE 62 Standard remain until verification of the infiltration claims are substantiated through valid research and study.

Appendix RA. Acceptance Requirements for Mechanical Ventilation (MV) - ARB recommends that MV systems be "acceptance" tested to verify adequate air flows, filtration, control system, duct design, accessibility and labeling. We support this recommendation.

11. We further suggest that CEC consider placing requirements that all measurement and verification of HVAC systems in Residential Applications be by a third party who is currently certified with either the Associated Air Balance Council (AABC) www.aabcdirect.com, National Environmental Balancing Bureau (NEBB) www.nebb.org, or the Testing Adjusting and Balancing Bureau (TABB) www.tabbcertified.org. A certified balancing report signed, stamped and should be provided to the building owner, CEC and the appropriate Code authority.

A CEC working group tasked to prepare a report to the California Assembly on the HVAC industry has identified poor duct installation, inadequate air flow over coils and duct leakage as major sources of lost energy in residential HVAC systems. It is absolutely necessary that CEC have proper methods of verifying system operation. The agencies listed above are the recognized experts on establishing standards protocols to test systems and should be referenced as suitable "verification" agencies for the purpose of complying with Title 24.

We appreciate the opportunity to offer input on the revisions to the building energy efficiency standards for California. If you have any questions please feel free to contact me.

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